

SA2008FV1CF00 Datasheet



Red (655 nm), and Infrared (940 nm) Emitter



Applications

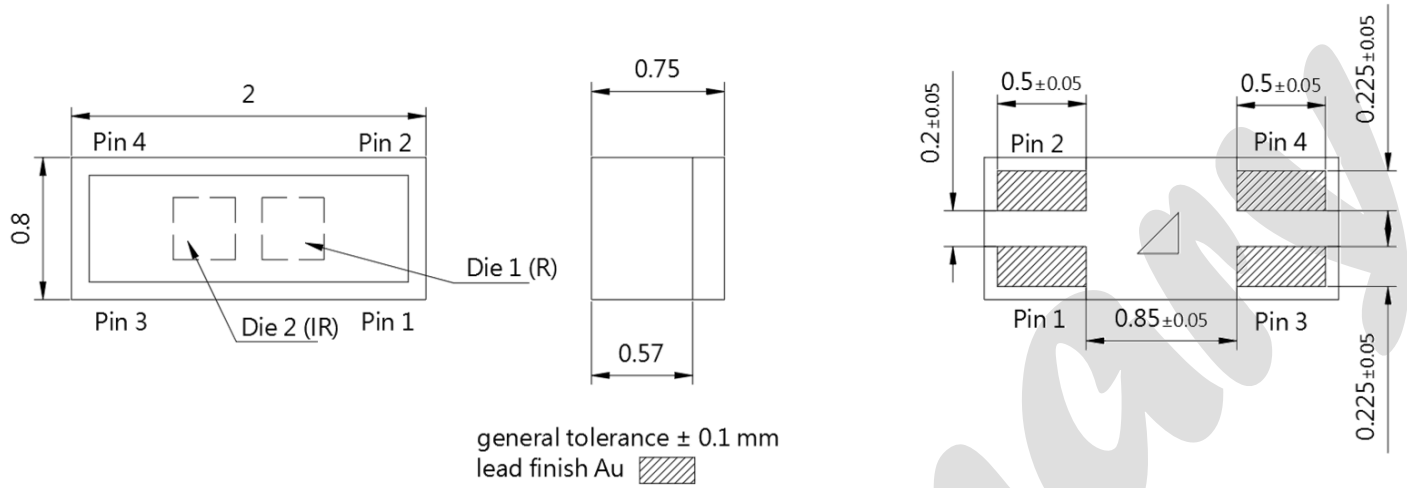
- Health Monitoring (Heart Rate Monitoring, Pulse Oximetry)

Features

- Package: clear epoxy
- ESD: 2 kV acc. to ANSI/ESDA/JEDEC JS-001 (HBM, Class 2)
- SMT package
- Suitable for SMT assembly
- Available on tape and reel
- Emitters can be controlled separately

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Dimensional Drawing

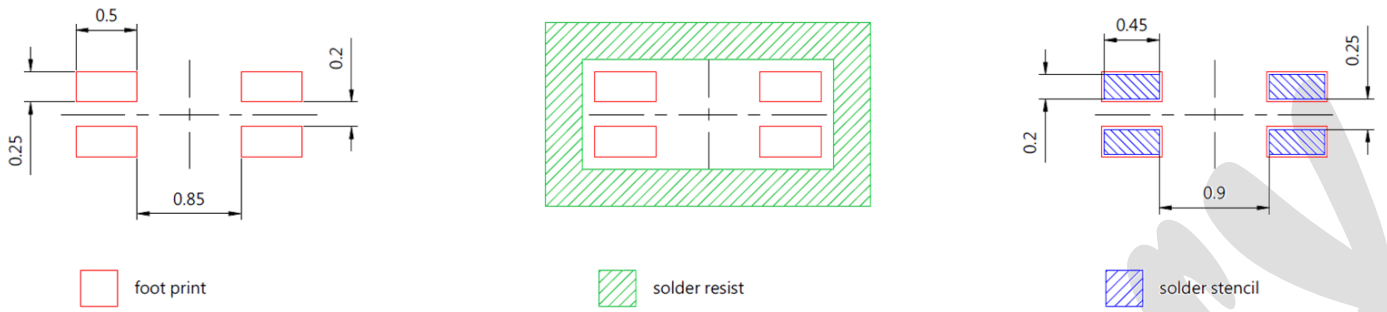


1. Dimensions are in millimeters.
2. General tolerance is ± 0.1 mm.

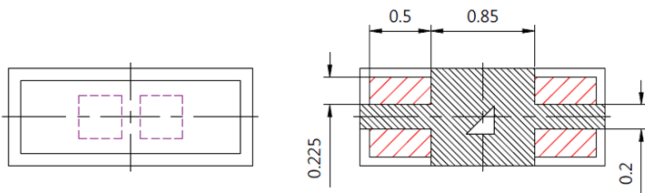
Pin	Description
1	NC
2	Cathode red emitter (655 nm)
3	Anode red / infrared emitter
4	Cathode infrared emitter (940 nm)

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Recommended Solder Pad



Component Location in Pad



For superior solder joint connectivity results we recommend soldering under standard nitrogen atmosphere.

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Maximum Ratings

T_A : 25 °C

Parameter	Symbol	Values		
		● Hyper red	● Infrared (940 nm)	
Operating temperature	T _{op}	Min.	-40 °C	-40 °C
		Max.	85 °C	85 °C
Storage temperature	T _{stg}	Min.	-40 °C	-40 °C
		Max.	85 °C	85 °C
Forward current	I _F	Min.	3 mA	1 mA
		Max.	40 mA	60 mA
Forward current pulsed t _p ≤ 2.3 ms; D ≤ 0.005	I _{F pulse}	Max.	0.3 A	1 A
Reverse voltage	V _R	Max.	5 V	5 V
Power consumption	P _{tot}	Max.	100 mW	110 mW
ESD withstand voltage acc. to ANSI/ESDA/JEDC JS-001 (HBM, Class 2)	V _{ESD}	Max.	2 kV	2 kV

The stated maximum ratings refer to one chip, unless otherwise specified.

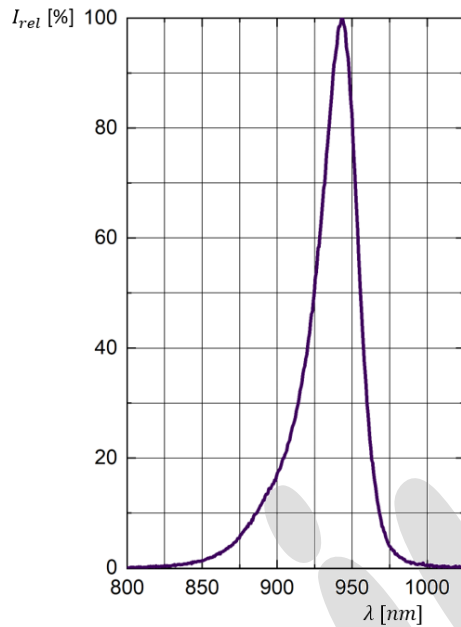
Characteristics

$I_F = 20 \text{ mA}$; $t_p = 20 \text{ ms}$; $T_A : 25 \text{ }^\circ\text{C}$

Parameter	Symbol		Values	Values
			● Hyper red	● Infrared (940 nm)
Peak wavelength	λ_{peak}	Typ.	660 nm	940 nm
Centroid wavelength	$\lambda_{\text{centroid}}$	Min.	653 nm	931 nm
		Typ.	655 nm	940 nm
		Max.	658 nm	950 nm
Spectral bandwidth at 50 % $I_{\text{rel,max}}$ (FWHM)	$\Delta\lambda$	Typ.	16 nm	32 nm
Half angle	φ	Typ.	60°	60°
Dimensions of active chip area	L x W	Typ.	0.35 x 0.35 mm x mm	0.35 x 0.35 mm x mm
Rise time (10 % / 90 %) $I_F = 100 \text{ mA}$; $R_L = 50 \text{ } \Omega$	T_r	Typ.	17 ns	16 ns
Fall time (10 % / 90 %) $I_F = 100 \text{ mA}$; $R_L = 50 \text{ } \Omega$	T_f	Typ.	17 ns	16 ns
Forward voltage	V_F	Typ.	1.99 V	1.39 V
Reverse current $V_R = 5 \text{ V}$	I_R	Max.	10 μA	10 μA
Radiant intensity $I_F = 20 \text{ mA}$; $t_p = 20 \text{ ms}$	I_e	Typ.	3.67 mW/sr	3 mW/sr
Total radiant flux	ϕ_e	Typ.	11 mW	9 mW

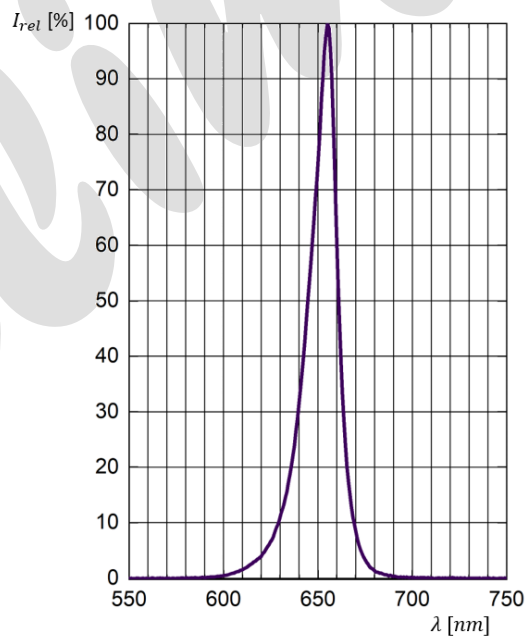
Relative Spectral Emission

● Infrared (940 nm) : $I_{e, rel} = f(\lambda)$; $I_F = 20 \text{ mA}$; $t_p = 20 \text{ ms}$



Relative Spectral Emission

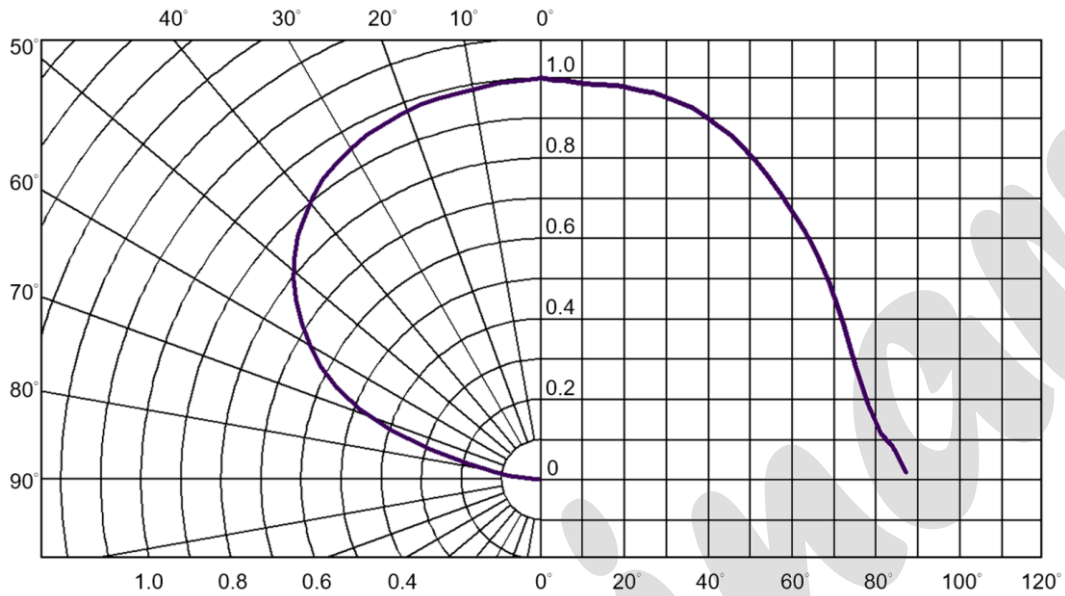
● Hyper red : $I_{e, rel} = f(\lambda)$; $I_F = 20 \text{ mA}$; $t_p = 20 \text{ ms}$



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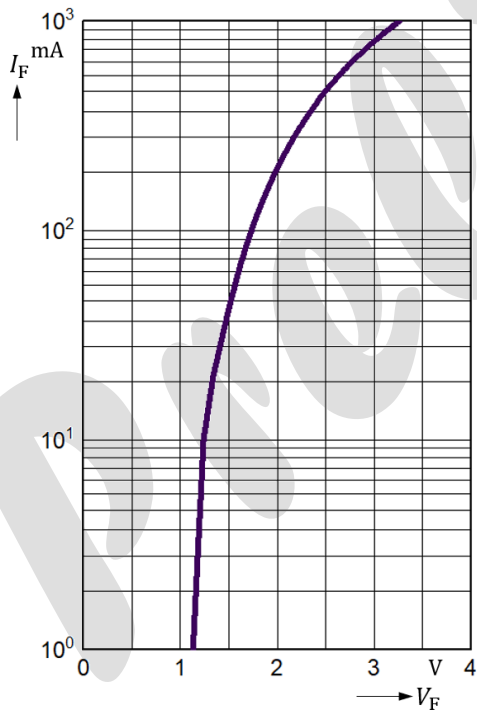
Radiation Characteristics

$$I_{rel} = f(\varphi); T_A = 25\text{ }^\circ\text{C}$$



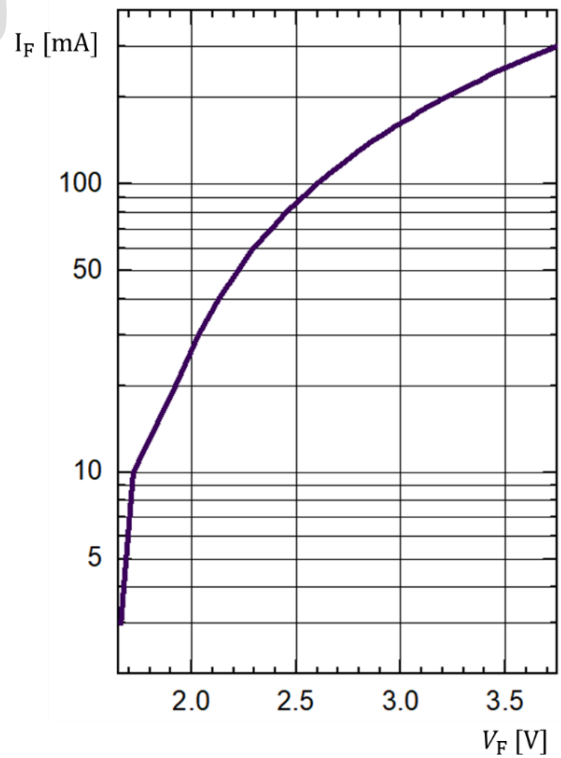
Forward current

● Infrared (940 nm) : $I_F = f(V_F)$; s.p.; $t_p = 100\text{ }\mu\text{s}$



Forward current

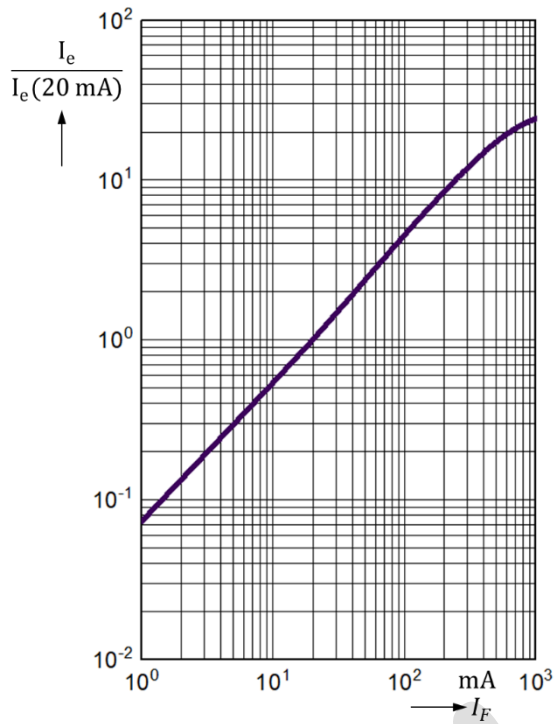
● Hyper red : $I_F = f(V_F)$; single pulse; $t_p = 100\text{ }\mu\text{s}$



Relative Radiant Intensity

● Infrared (940 nm) :

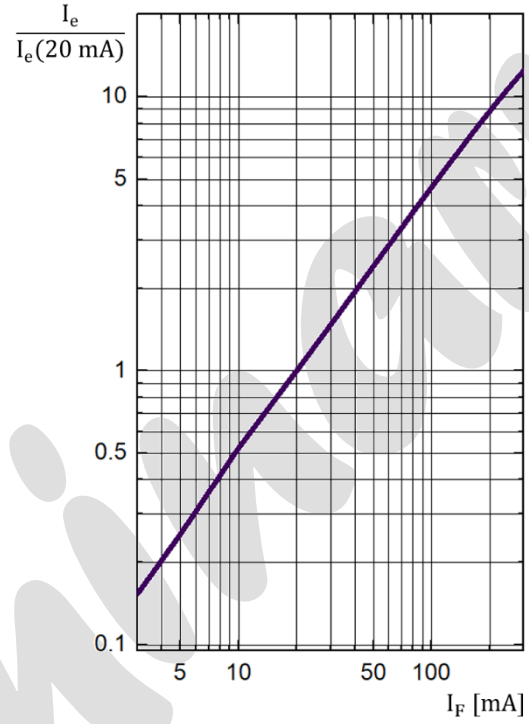
$I_e/I_e(20\text{ mA}) = f(I_F)$; single pulse; $t_p = 100\ \mu\text{s}$



Relative Radiant Intensity

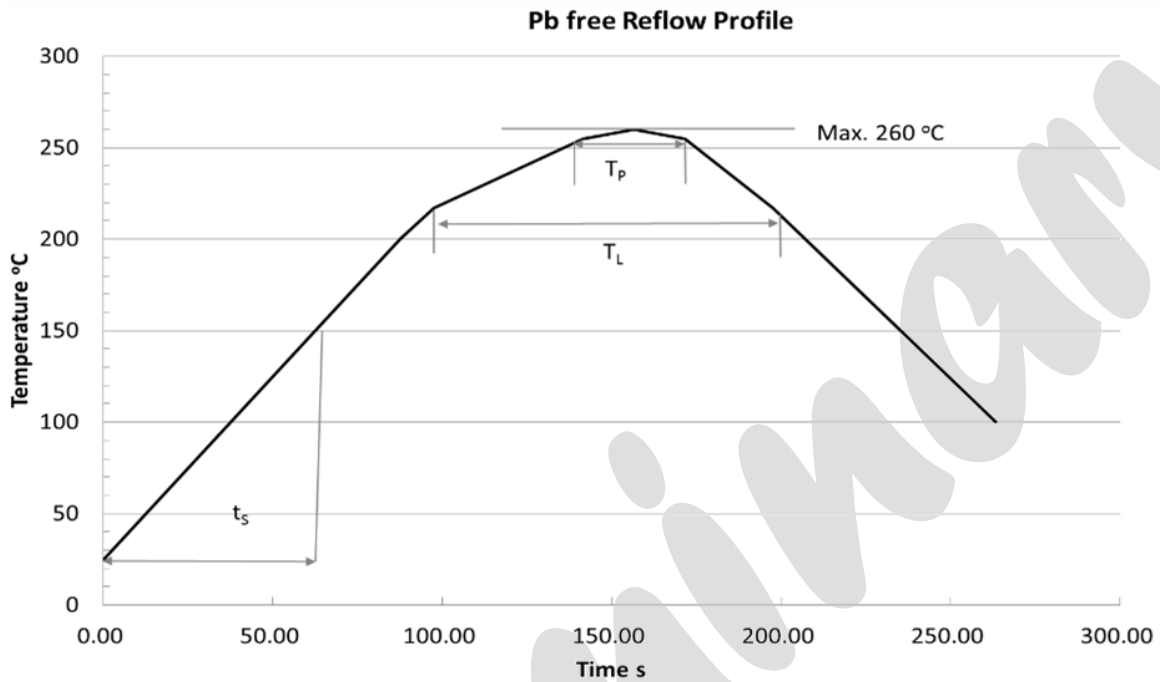
● Hyper red :

$I_e/I_e(20\text{ mA}) = f(I_F)$; single pulse; $t_p = 100\ \mu\text{s}$



Reflow Soldering Profile

Product complies to MSL Level 3 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Minimum	Recommendation	Maximum	
Ramp-up rate to preheat 25 °C to 150 °C			2	3	K/s
Time t_s T_{Smin} to T_{Smax}	t_s	60	100	120	s
Ramp-up rate to peak T_{Smax} to T_P			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature T_P - 5 K	T_P	10	20	30	s
Ramp-down Rate T_P to 100 °C			3	4	K/s
Time 25 °C to T_P				480	s

1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

Disclaimer

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2. The product meets Brightek published specification for a period of one year from date of shipment.
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